Amendment to the Claims:

1. (Currently Amended)   A   diagnostic   imaging   system comprising:

a scanner for acquiring image data of an organ;

a reconstruction processor for reconstructing the image data into a three dimensional (3D) image representation of the organ;

a workstation including a memory which stores a plurality of 3D shape models and one or more processors which define a set of global tools and set of manual tools;

a user interface a means for selecting by which a user:

selects a 3D shape model of [[an]] the organ from the workstation memory;

manipulates [[a]] the set of global tools a means for best fitting to fit the selected 3D shape model to the image data 3D image representation of the organ; and

manipulates [[a]] the set of manual tools means for modifying to modify selected regions of the selected 3D shape model to precisely match corresponding regions of the image data 3D image representation of the organ.

2. (Currently Amended)   The system as set forth in claim 1, wherein the selected 3D shape model is represented by an adaptive mesh including:

vertices and links which connect individual vertices, the set of manual tools means deforming the mesh such that individual vertices are moved in accordance with a move of a mouse.

3. (Currently Amended)   The system as set forth in claim 1, wherein the selected 3D shape model is represented by an adaptive mesh including vertices and the set of manual tools means includes:

manual tools which are used by a user to manipulate the mesh to match the image data 3D image representation of the organ.

4. (Currently Amended) The system as set forth in claim 3, wherein the manual tools include:

a Gaussian pull tool which deforms a surface of the <u>selected 3D shape</u> model by pulling selected vertices along a predefined smooth curve.

5. (Original) The system as set forth in claim 4, wherein the predefined smooth curve is a Gaussian curve.

6. (Currently Amended) The system as set forth in claim 5, wherein ~~the Gaussian curve is controlled by~~ <u>the user interface controls</u> a radius which defines a width of <u>a</u> Gaussian spread <u>of the Gaussian curve</u>.

7. (Currently Amended) The system as set forth in claim [[5]] <u>6</u>, wherein ~~the Gaussian curve is controlled by~~ <u>the user interface controls</u> x- and y-radii <u>of the Gaussian curve</u>, wherein x-radius defines a width of <u>the</u> Gaussian spread in a direction of a move of a mouse and <u>the</u> y-radius defines a width of Gaussian spread in a direction which is orthogonal to the mouse move.

8. (Cancelled)

9. (Currently Amended) The system as set forth in claim 5, wherein the ~~vertices are pulled~~ <u>user interface controls include a mouse which pulls the vertices</u> a distance from an initial position defined by [[a]] <u>the</u> mouse to an end position defined by the mouse.

10. (Previously Presented) The system as set forth in claim 3, wherein the manual tools include:

a sphere tool which moves vertices located within a predefined radius of the sphere to a surface of the sphere.

11. (Cancelled)

12. (Currently Amended)   The system as set forth in claim 3, wherein the manual tools include:

a pencil tool which deforms an original boundary of the <u>selected 3D shape</u> model to align the original boundary with a drawing path defined by a mouse.

13. (Cancelled)

14. (Currently Amended)   The system as set forth in claim 1, wherein the <u>set of global tools</u> best-fitting-means fits the <u>selected 3D shape</u> model by applying at least one of scaling, rotation, and translation to the <u>selected 3D shape</u> model as a whole.

15. (Currently Amended)   The system as set forth in claim 1, wherein the <u>selected 3D shape</u> model is selected from an organ model database and further-including:

wherein the user interface a means for dragging <u>drags</u> and dropping

5   <u>drops</u> the <u>selected 3D shape</u> model on the image-data <u>3D image representation of the organ</u>.

16. (Cancelled)

17. (Currently Amended)   A method of segmenting the <u>a</u> image of the <u>a</u> diagnostic imaging system of-claim 1, comprising:

<u>acquiring image data of an object;</u>

<u>reconstructing the image data into a three dimensional (3D) image</u>

5   <u>representation of the object;</u>

dragging and dropping <u>a</u> the selected <u>3D shape</u> model on the image data <u>3D image representation of the object;</u>

globally scaling, rotating and translating the <u>selected 3D shape</u> model to fit the image-data <u>selected 3D shape model globally to the 3D image representation</u>

10   <u>of the object;</u> and

deforming local regions of the <u>selected 3D shape</u> model with a set of manual tools to match the <u>local regions of the selected 3D shape model to the</u> ~~image data~~ <u>3D image representation of the object</u>.

5 18. (Currently Amended) The method as set forth in claim 17, wherein the <u>selected 3D shape</u> model is represented by an adaptive mesh which includes vertices and links connecting individual vertices and the step of deforming <u>the local regions</u> includes:

selecting vertices to be deformed;

10 selecting a transformation algorithm to transform the <u>selected</u> vertices;

converting mouse motion into local deformation parameters; and

transforming the selected vertices in the <u>selected 3D shape</u> model by the local deformation parameters.

19. (Currently Amended) The method as set forth in claim 17, wherein the set of manual tools includes ~~at least one of~~:

a Gaussian pull tool;

a Sphere push tool; and

5 a Pencil tool.

20. (Previously Presented) A method of preparing a radiation therapy plan comprising:

acquiring image data;

automatically segmenting the image data by selecting a best-fit model

5 representative of one or more segmented structures in the image data;

applying manual shape-altering tools to the best-fit model such as to modify the model to conform to the image data;

using the modified segmented image data to form a radiation therapy plan.

21. (Previously Presented) The method of claim 20, wherein the modified model is saved as a potential best-fit model in future radiation therapy plans.

22. (New) The method of claim 20, wherein the image data is a three dimensional image representation of an object.

23. (New)   The method of claim 20, wherein the best-fit model is represented by an adaptive mesh which includes vertices and links connecting individual vertices and the step of deforming includes:

selecting vertices to be deformed;

selecting a transformation algorithm to transform the selected vertices;

converting mouse motion into local deformation parameters; and

transforming the selected vertices in the best-fit model by the local deformation parameters.